167548

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT
NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
BUILDING 53, BOX 25227, DENVER FEDERAL CENTER
DENVER, COLORADO 80225

TO: Donald C. Gipe, Chief
Technical Analysis Branch

DATE: December 21, 1983

FROM: Alan E. Peckham
Hydrologist, TAB

SUBJECT: Environmental Assessment-Dupo Hazardous Waste Disposal Site, Dupo, Illinois (A43-05)

SUMMARY

Soil samples from the Dupo Site were collected from locations where there was visual or other evidence of oil spills and possible contamination. Fluid samples were collected from three wells on the site. This investigation clearly establishes that the occurrance of PCB's in the soils of the Dupo site is wide spread and that PCB's also are present in oil fractions of samples from two wells. The figure on the following page shows all sampling locations.

In summary the principal findings show that PCB's were found in all soil samples collected. The fluid samples from the wells fractionated into oil and water (brine) fractions. Because PCB's and dioxins have an affinity to concentrate in oils only, the oil fractions of the fluid samples were analyzed for these constituents. PCB's were detected in the oil fractions of all fluid samples from the old disposal well (well 01), see figure, and in the oil sample from old oil well B (well 03). No PCB's were detected i the oil sample from old oil well A (well 02). No dioxin was detected in a soil or oil samples collected from the site. These findings show that oil containing PCB's were handled, stored, spilled and disposed of at this fac ility. No evidence of dioxin contamination was discovered.

BACKGROUND

NEIC, as requested by Region V, obtained and analyzed soil and well fluid samples from an abandoned RCRA facility near Dupo, Illinois about 15 miles southeast of St. Louis, Missouri. Sampling was done during the period June 20 -25, 1983. The specific number and locations of soil samples were determined by NEIC staff based on evidence of possible oil spills and locations of former oil handling, storage and disposal operations. Because there is gravel mixed with the soil it was not possible to obtain soil cores, however, some soil samples were dug from holes up to two feet in depth.

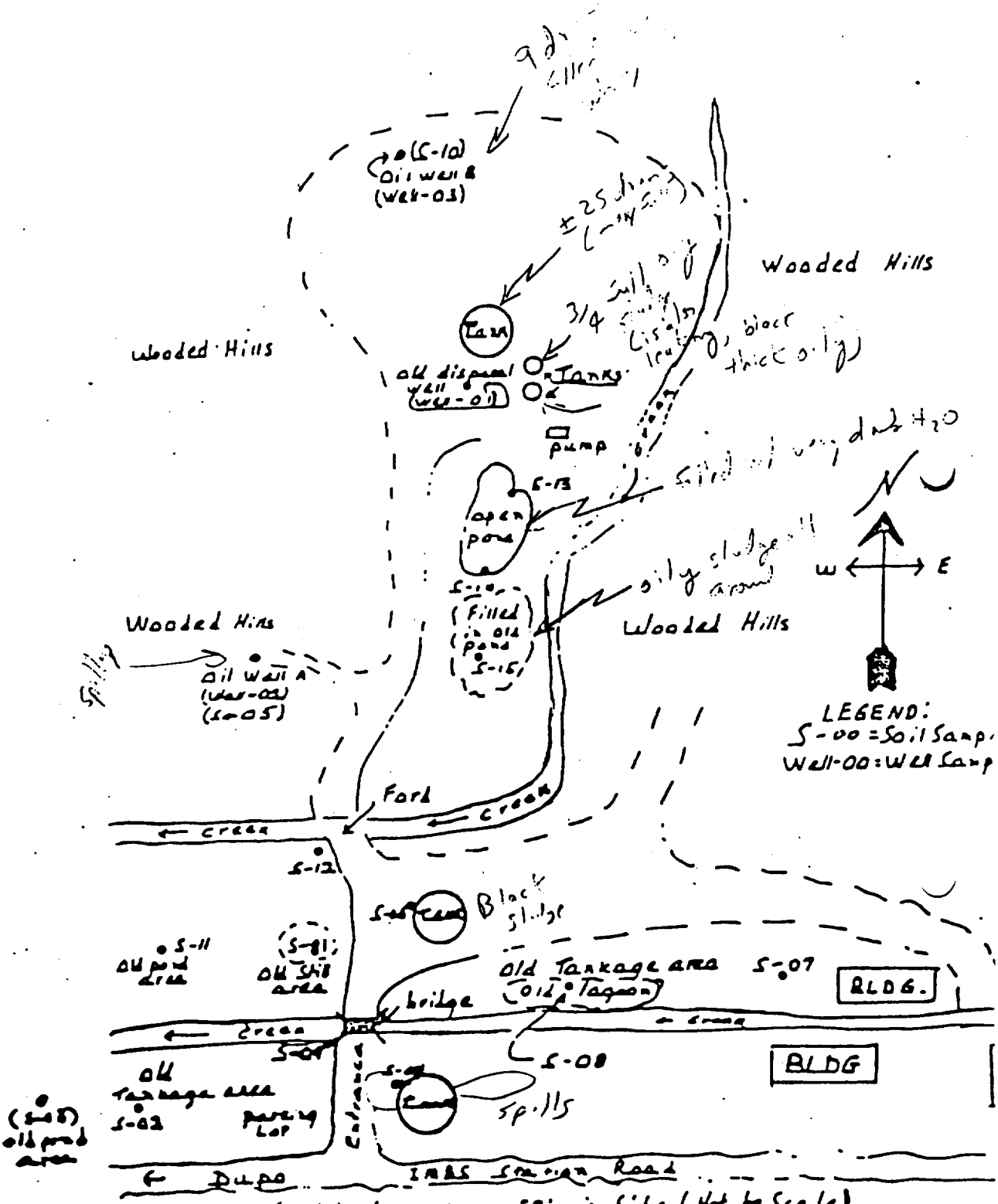

Figure 1. Sketch Map Dupo Illinois Site Not to Scale
(Total Site dimensions are about 150 yds E-W by 250 yds N-S)

Fluid samples were collected by a Region V contractor (PEDCO) and NEIC staff from an abandoned 3000 foot deep old disposal well and two abandoned old oil wells on the site.

FIELD ACTIVITIES

Those present during all or parts of the field work included:

NEIC: Alan E. Peckham, Hydrologist
Joyce Kopatich, Environmental Engineer Techician

Region V EPA:
Edith Ardiente, Chemical Engineer
Lou Halkias, Special Agent in Charge, Chicago
Mike Konyu, Special Agent, Chicago

PEDCO (Region V Contractor):

Douglas Morell, Hydrogeologist
Paul Manna, Industrial Hygiene Technician

Illinois State EPA:

Ken Mensing

John Mathes and Associates, Inc.:

David Taylor, Mgr. Special Projects
Charlie Roberts, Well rig operator and helper

Initial purging of the old disposal well was accomplished by allowing the well to flow naturally under its own pressure head. Starting flow rate was approximately one gallon in 35 seconds and gradually diminished to a trickle estimated to be only 0.25 gallon per minute. Initially the well flowed into a galvanized watering tank. From the tank the purge fluid was pumped into a tanker truck for storage until a proper method of disposal could be arranged. Final purging and sampling was achieved by using an oil well workover rig equipped with wire line, sinker bar, swabbing equipment and oil saver.

Tubing in the old disposal well was severely corroded and flakes of eroded pipe were plugging the tubing. This condition made it impossible to install the positive displacement oil field "jack" pump which had been provided to

The schedule of samples collected form the old disposal well is as follows:

DATE	TIME	Volume Purged	Method
6/20/83	1445	Nil	Well flowing
6/23/83	1200	1057 gal.	Well flowing
6/24/83	1233-1337	3000 gal.	Swabbing
6/24/83	1650	5000 gal.	Swabbing
6/24/83	2035	7000 gal.	Swabbing
6/25/83	0045	11000 gal.	Swabbing

In addition, a composite sample from the two tanker trucks storing the purged fluid was collected after purging was completed. An analysis of this sample was needed to aid in determining a safe and proper means of transporting and disposing of the purged fluid. The method used to collect this composite sample was as follows:

The first of two tankers used held approximately 4,000 gallons of liquid with a depth of five feet. A proportional sample was taken from a porthole at the rear of the tank. An 8-oz. stainless steel "Bacon Bomb" was used to collect two samples at the surface, four samples at 2 1/2 feet below the surface and two samples at the bottom. Each sample was emptied into a stainless steel bucket. The second tanker truck was larger having four compartments of about 2200 gallon capacity each. Three of these were nearly full and one was just slightly over half full. From the partially filled compartment four "Bacon Bomb" samples were collected from 1 1/2 feet below the fluid surface and two bottom samples were collected and emptied into the stainless steel bucket for a total of six. The other three compartments were sampled collecting two surface, four middle depth (3 ft below surface) and two bottom samples for a total of twenty four. Each of these was composited into the stainless steel bucket. The liquid from this composite was proportioned out into one-gallon glass jars.

The other two wells were reportedly old oil wells. They were sampled by hand with a Teflon bailer suspended on a nylon cord.

Between sampling the first and second old oil well, the bailer was cleaned by the Region V contractor (PEDCO) staff using a spray "gunk" mixture, washing with hot tap water and soap, rinsing with distilled water and drying with Kimwipes. The nylon cord used in sampling old oil well A, was discarded and new cord was used in sampling old oil well B. Three samples were collected from old oil A at depths of 62 to 73 feet, 400 ft. and 550 to 557 feet respectively. Two samples were collected from old oil well B. These samples were collected from depths of 35 feet and 85 feet respectively. In each case the bailer reached refusal at the depths of the lower most sample. Oil wells would normally be expected to be deeper than indicated by these samples. Possible explanations include constrictions in or rupture of the well casings or partial backfilling and caving of geologic formations.

Fifteen prospective soil sampling locations were staked where there was evidence of oil spillage, at locations where discussions between Mr. Konyu and a former site employee suggested that contaminants might be found, and at locations selected from an old aerial photograph which shows former tankage and pond areas. Some of these areas had been covered over with soil, dirt and gravel.

Depending upon the site, soil samples were taken from the surface with either a stainless steel spatula or a shovel. Because of the gravel/soil mixture it was not possible to penetrate the ground with a soil coring device consequently no soil core samples were obtained. As an alternative, at locations where buried soil contamination was suspected, holes were dug by shovel and samples were collected to depths ranging to two feet. For some sample sites the soil was composited, from several areas within the site, in a Teflon coated pan and put in quart jars. All equipment used for sampling such as shovel, spatulas and Teflon coated pans, were washed with soap and water, rinsed with distilled water then acetone and air dried between use at each sampling location.

Samples were packaged for transport back to the NEIC Laboratory for analysis.

Splits of all samples collected were offered to the site owner, Mr. Victor Nettles Jr. of St. Louis, Missouri who declined to accept them. The split samples were then relinquished to Mr. Mike Konyu, Special Agent, Region V.

ANALYTICAL RESULTS

The analytical data indicate that oil containing PCB's was disposed of in the old disposal well (well 01) and in old oil well B (well 03). All of the oil samples from Well 01 contained the PCB Aroclor 1260 at concentrations ranging from 41 to 76 ug/g. None of the oil samples from old oil well A (well 02) contained detectable levels of PCB. Both the shallow and deep

oil samples from Well 03 contained measurable amounts of PCB's being 5.3 and 1.0 ug/g respectively.

Four of the nine samples from the old disposal well contained the chlorinated solvent, trichloroethene, at concentrations very near the limit of detection. The oil samples from the two old oil wells (wells 02 and 03) did not contain measurable levels of chlorinated solvents.

All soil samples contained measurable levels of the PCB Aroclor 1260 while 10 of the soil samples contained measurable levels of the PCB Aroclor 1242. Total PCB concentrations in soil samples ranged from 0.2 ug/g in soil near old oil Well A to 78 ug/g near old oil well B. Five of the samples contained total PCB concentrations in excess of 30 ug/g. The average total PCB concentration in soil samples was 18.1 ug/g.

Dr. Garnas' memorandum to you of October 13, 1983, attached, discusses the analytical results in detail and includes the following attachments:

A-D	CHAIN OF CUSTODY RECORD	
E-F	TABLE A.	GENERAL CONSITIUENT ANALYSIS
G	TABLE B.	DISSOLVED ELEMENTAL CONSTIUENTS
H-I	TABLE C.	X-RAY FLUORENSCENCE ELEMENTAL CONSTITUENTS
J	TABLE D.	GENERAL CONSTITUENTS ANALYSIS PRECISION AND ACCURACY REPORT.
K	TABLE E.	DISSOLVED ELEMENTAL CONSTITUENTS ANALYSIS PRECISION AND ACCURACY REPORT.
L	TABLE F.	X-RAY FLUORESCENCE ELEMENTAL CONSTITUENTS ANALYSIS PRECISION AND ACCURACY REPORT.
M	TABLE G.	ANALYTICAL RESULTS: PCB AND CHLORINATED SOLVENT ANALYSIS OF OILS.
N	TABLE H.	ANALYTICAL RESULTS: PCB ANALYSIS OF SOILS.
O	TABLE I.	PCB AND CHLORINATED SOLVENT ANALYSIS: PRECISION AND ACCURACY.
P	TABLE J.	TCDD ANALYSIS FOR SOILS AND OILS: INTERNAL STANDARD RECOVERY AND DETECTION LIMIT.

BROCHURE

People v. Larry E. Wilson, Thomas A. Wilson, Ilada Energy Company, and Jerry Russell Bliss, Inc.
EPA File No. 6185

General Background

This case primarily involves apparent violations at a three acre solid waste management site in the Dupo oil field Route 1, East Carondolet, Illinois, in St. Clair County. The site is owned by Mr. Victor H. Nettle but is operated by Ilada Energy Company (Ilada) and is identified in Land Pollution files as Dupo/Ilada Energy. This case also involves waste hauling violations, since Ilada and Bliss currently are licensed special waste haulers. Finally, this case involves a second site owned by Ilada near East Cape Girardeau, in Alexander County.

History of Sites

The Dupo site has been in operation for over thirty years but Ilada has been involved only since 1979 (it was authorized to do business in Illinois on January 22, 1979). The site accepted and processed waste oil and oil sludge, produced crude oil, and blended fuel oils; it was authorized in the past to accept waste oil from specified generators for processing, storage and disposal. Immediately after the advent of implementation of the Illinois waste manifest system in mid-1979, this authority was embodied in temporary registration/authorization numbers routinely issued to known waste-handling sites, including the Dupo site; these temporary numbers were given out without any standards being applied to sites simply to enable the manifest system to work. On September 19, 1980, Ilada was advised by the Agency that in order to continue to accept special wastes for processing, storage and treatment, Agency permits would have to be obtained. Ilada was advised that the old registration/authorization numbers would expire in ninety (90) days or, if an operating (OP) permit application was submitted within sixty (60) days, upon completion of the Agency review of the OP permit application, whichever occurred last. Application for OP permit was not made until January 7, 1981. In the meantime, Ilada had applied (on October 12, 1979) for a development (DE) permit for the site; this was granted on January 8, 1980, and expired one year later. Application for renewal of the DE permit was made January 22, 1981; thus, as of January 22, 1981, Ilada had pending applications for both DE and OP permits. Consideration of these applications was consolidated, and both permit applications were denied on April 6, 1981, with the result that since at least that date, Ilada possessed authority neither to develop nor operate this site (Actually, by the terms of the original DE permit, there was no DE permit for the site after the original one expired on January 8, 1981; similarly, since application for the OP permit wasn't submitted until more than ninety days after the Agency had advised Ilada that its old authorization numbers were expiring, any operating authority actually expired sometime in late December, 1980).

Ilada apparently bought the East Cape Giradeau site in mid-1981. It is an old facility originally built by the Federal Government in 1942, but has lain idle for some time. The site had several storage tanks, pipes and pumps left over from its government days, and Ilada has added additional tanks and pipes. Ilada apparently plans to considerably expand the site. It has applied for a DE permit for the site, but the request was refused in December, 1981. It has never possessed authorization numbers or permits for operation of the site.

Investigation of Sites

In January and March of 1981, the Agency was contacted by Mr. Nettle in connection with the Agency's review of the Ilada permit applications. Mr. Nettle complained bitterly regarding various alleged shortcomings of the Wilson Brothers and Ilada Energy Company. He also alleged that the Dupo site was continuing to operate and accept waste even though it no longer had a permit or other authority to operate. Eventually Mr. Nettle's difficulties with Ilada led to his refusal to sign the permit applications as owner, which in turn lead to the Agency's denial of the permit applications. On July 23, 1981, Ken Mensing of the Division's southern region Field Operations Section (FOS), reported that he received word from Bill Child that Bliss Oil Company was delivering waste at the Dupo site. He called Mr. Nettle, who informed him that Larry Wilson and Bliss Waste Oil were bringing waste oil to the site even though the site did not have a permit. Mr. Nettle discussed several things, including Ilada's alleged financial difficulties. Since that time, Mr. Nettle has also mentioned and described several incidents which indicated numerous Act violations may have occurred besides those alluded to herein.

On July 29, 1981, Mensing and Mr. Pat McCarthy of FOS spoke with Mr. Nettle at his home. Mr. Nettle reported again that Larry Wilson had continued to bring waste oil to the site and to store and process it without a permit. He reported having seen Bliss Waste Oil trucks at the site twice during the last couple of weeks in July. On July 28, 1981, he observed two Bliss trucks parked at the site and took photos of them. Earlier, Mr. Nettle had entered the property (in mid-June of 1981), and had taken a sample of material that was spilled near what is known as tank #4 on the site. The material that he sampled was sent to a St. Louis area lab which tested the material for PCBs. On June 24, 1981, the lab reported a PCB content concentration of 15 micrograms per gram. Although the Agency cannot rely on this data without knowledge of the propriety of the laboratory methodology and sampling methodology, the incidents reported and the samples taken by Mr. Nettle at least provide circumstantial evidence that operations were continuing at the Dupo site long after expiration of the permit.

Agency FOS personnel thereafter inspected the site on August 18 and 25 1981; they photographed and obtained samples of various locations within and around the site. Laboratory results of these samples confirm the presence of waste oils and hazardous substances. At about the same time

the Division of Criminal Investigation (DCI) of the Department of Law Enforcement (DLE), was investigating the activities of a Missouri-based firm, Bliss Oil Company referred to previously and operated by a Mr. Russell Bliss. DCI investigators confirmed Mr. Nettles earlier report that Bliss Oil Company had at one time routinely hauled waste oil to the Dupo site. DCI investigators also disclosed that as recently as August, 1981, Mr. Lloyd Tutor, site operator for Ilada, had apparently pumped waste oil into a tank at the Ilada site from an Ilada truck without permit or other authority. DCI investigators also interviewed several witnesses whose testimony indicates that hazardous waste as well as ordinary waste oil was routinely stored or processed at the site. The storing of hazardous waste at the site was never permitted by the Agency.

The Agency's pre-DE inspection of the East Cape Girardeau site indicated that oily, materials were present on November 19, 1981; however Larry Wilson described these materials as "product", not requiring treatment and hence not properly classified as waste. This description is at odds with the general statements provided to DCI investigators by Ilada drivers and other statements previously provided to Agency inspectors by various persons, including Larry Wilson.

To summarize the results of the Agency and DCI investigations of both sites, it appears that Ilada has operated the Dupo site after at least April 6, 1981 (more accurately, after at least January 8, 1981) without a permit for development or operation. It is possible that the site was also operated in violation of the permit conditions that did exist, to the extent that wastes other than waste oil and associated products were present. As for the East Cape Girardeau site, there is evidence (albeit mostly hearsay) that Ilada has routinely processed waste oil at the site without manifests of deliveries, or any permit authority whatever from the Agency for developing or operating the facility.

History of Waste Hauling Operations

Ilada was issued a special waste hauling permit (#0211) on August 10, 1979. That permit expired September 30, 1980, but was replaced on December 19, 1980 by a new permit. That permit expired on March 31, 1981 and was replaced by a new special waste hauling permit on April 21, 1981. The latter special waste hauling permit was due to expire on April 15, 1982. Bliss was issued its special waste hauling permit (#0186) on July 27, 1979. That permit was renewed on February 25, 1981, and again on February 2, 1982. The latest permit will expire on March 31, 1983.

Investigation of Waste Hauling Operations

Investigation of Ilada operations disclosed many actual and apparent hauling operation violations. Representatives of the Agency, the Attorney General's Office, the Missouri Highway Patrol and the DCI reported on numerous occasions that trucks operated by Ilada were found

to be leaking their contents, to be devoid of proper registration, and in some cases to be hauling waste materials while the trucks' I.C.C. valves were improperly wired open (Attachments 56, 57). There is one reported DCI observation of an Ilada truck engaged in flagrant open dumping (Attachments 52, 53 and 54). There is evidence to suggest that incidental to the apparent phasing out of the Dupo site as a waste oil processing site in 1981 (during which time many of the infractions occurred which were noted by the Agency and DCI in August and September of 1981), Ilada was engaged in shipping waste oil and other materials from the Dupo site to Ilada's other facility in East Cape Girardeau. The Agency has no record of any manifested waste shipments to or from the Ilada site occurring during this period. To the extent that the materials shipped constituted wastes and were hauled without manifest these actions were violations of the Act, and were especially violations of Rule 302 of Chapter 9.

Investigation of Bliss operations disclosed an apparent but strongly manifested pattern of illegal conduct, not all of which is directly germane to this case. Even Larry Wilson has been quoted (Attachment #32) as identifying Bliss as a "suspicious" source of waste oil. Bliss' reputation extends out-of-state: The State of Missouri has brought two actions for major spilling and dumping by Bliss (Jefferson City Circuit Ct. No. 1653, and St. Louis County Circuit Ct. No. 444390) within the last three years. Information provided by Missouri DNR indicates that Bliss' application for a Hazardous Waste Transporter license was denied. Bliss has appealed. Here in Illinois, we have Mr. Nettle's testimony and photographs and letters (Attachment 10, 14 and 42) indicating that Bliss was a regular hauler of waste oil to the Dupo site, although the site was unpermitted and no manifest records were generated. Some Ilada employees confirm - generally - Bliss' involvement w/ Ilada. A puzzling incident leads the Agency to speculate whether the relationship between Bliss and Ilada might be substantial: in the course of an Agency inquiry unrelated to this enforcement action, a telephone call to the number set forth on Bliss' permit application was answered by a receptionist who identified the called number as that of "Ilada Energy Company".

Location of Sites

The Dupo site is located in St. Clair County, Illinois. The property has the following legal description: three acres in part of Lot 5, in the Northeast quarter of US Survey 430, Township 1N, R.10W., 3rd P.M., St. Clair County, Illinois.

The East Cape site is located in Alexander County, Illinois. The property has the following legal description: 20.3 acres in the N.W. quarter of Section 32, T.14S., R.3W., 3rd P.M., Alexander County, Illinois.

Respondents; Registered Agent

As previously noted, Ilada was authorized to do business in January of 1979. Its registered agent is listed as Ruby Carson; her address is Route 1, Box 159, East Carondolet, Illinois. She is shown in the application for Certificate of Authority to Form Corporation as the Secretary and as a Director of the Corporation. The corporation is a Nevada corporation and its principal office is listed as 402 North Division Street, Carson City, Nevada.

There is apparently no record of Bliss as a corporation at the Illinois Secretary of State's office. It is known that at least for some time, the corporate identification was a sham adopted by the owner, Jerry Russell Bliss of Missouri. Correspondence received by the Agency seems to indicate that incorporation may have finally taken place in Missouri (see Attachments 73 and 74). Discovery may be needed to determine Bliss' exact current status in Illinois and elsewhere. This should be checked out prior to filing of the attached complaint, which identifies Bliss (based upon the above-noted correspondence) as a corporation in the heading and in paragraph 7 of Count IV.

Apparent Violations

As indicated in the attached draft proposed complaint, the Agency believes the following violations of the Environmental Protection Act and Chapter 3, 7, and 9 of the Illinois Pollution Control Board Rules and Regulations should be alleged:

1. Sections 12(a), (b), (f) and possibly (d) of the Act (Water Pollution); these violations and apparent violations arise, inter alia, from the alleged unpermitted practice of Ilada employees of disposing of wastes of unknown and possibly hazardous nature down a well on the Ilada site at night. This is referred to in the memo of Ken Mensing dated 8/3/81. This practice would also, of course, constitute violations of at least Rule 901 of Chapter 3 of the Board's Regulations. Other examples of actual or potential water pollution derive from the open dumping, site violations and waste hauling violations described below.

2. Sections 21(a)(d) and (e) of the Act (Open Dumping, operating without a permit and disposal of refuse at a facility which fails to meet requirements of the Act); these violations stem from the observed open dumping by an Ilada truck (Attachments 52-54) and from the numerous other improper activities at the Ilada sites referred to earlier, including the dumping at and other use of the Dupo facility after the expiration of its operating authority and all other activities performed at either site in violation of permit or without necessary permits. Such activities also constitute violations of Rules 202(a), 210 and 310 of Chapter 7 of the Board's Rules.

These violations are substantiated by numerous attachments hereto, including the inspection report of August 25, 1981 (Attachment 34), the memorandum by Ken Mensing dated August 3, 1981 (Attachment 17), the various communications from Mr. Nettle (Attachments 10, 14 and 37), and various recorded observations by persons to whom Agency and DCI personnel have spoken (e.g., Attachments 32, 43, 47, 57 and 59).

3. Sections 21(d) and (e) of the Act (transportation of wastes without permit, in violation of permit, and to a non-conforming site); involved are the various observed violations reported by Mr. Nettle, DCI personnel and others indicating that Ilada (and, in some cases, Bliss) trucks on numerous occasions brought waste substances to the Ilada Dupo site after its permit/authority had expired and without use of manifests.

Other observed infractions relate to shipments to and from the Ilada East Cape site (see Attachments 32 and 57) as well as to and from other sites (see Attachments 56 and 57); particular note, of course, should be made of the open dumping incident reported and authenticated by DCI (Attachments 52-54), since this constitutes a hauling violation as well. Besides the above-mentioned Act violations, these actions constitute violations of Chapter 9 Rules 202, 302, 501 and possibly 301 as well as of the express terms of Ilada's special waste hauling permit.

Special note should be made that the conduct of Ilada on and after September 3, 1981 (the effective date of the PA 82-380 amendment to the Act) should be measured against the expanded scope of Sections 21(d) and (e), as well as the additional prohibitions relating to hazardous wastes as set forth in the new Sections 21(f) through (i). Hence, the transportation of special wastes in violation of the conditions of the special waste hauler's permit issued to Ilada became an offense under Section 21(d) on September 3; prior to that date, such permit condition infractions arguably constituted violations of the permit only, leaving the propriety of the permit conditions under Section 22 in doubt (e.g., note that Section 22 confers no explicit authority on the Board to regulate or prescribe standards for the transportation of special, non-hazardous waste.

4. Sections 44(a), (e), (f) and possibly (b) and (c). (Degrees of violations; misdemeanors/felonies); violations as alleged above constitutes at least misdemeanors under Section 44(a) and may constitute felonies under subparagraphs (b) and (c). The alleged violations of Secton 12(f), if done knowingly, constitute a criminal offense under Section 44(c). Since Ilada is a close corporation, and Thomas Wilson its President and a director, actions by Mr. Wilson are properly imputable to the corporation under Section 44(f)(2). See "Relief Requested" below.

Agency Witnesses

Among the witnesses available to the Agency in this case are Messrs. Pat McCarthy and Ken Mensing of the Agency's southern region FOS Office, Special Agents Landers and Long of the Department of Criminal Investigation, Mr. Nettle, and possibly other persons to whom Agency and DCI investigators have spoken in the past including Mr. Carl Jones, Mr. Lloyd J. Tutor, and Mr. Richard Freeman. Another person possibly worth speaking to is Mr. Al Pelgus who is referred to by Mr. Nettle and who was apparently injured on the job while an employee of Ilada. Mr. Pelgus apparently has terminal cancer and should be deposed promptly. Mr. Nettle is also gravely ill (possibly with cancer) and should be deposed promptly.

A list of potential witnesses (including a synopsis of their expected testimony) is attached hereto.

Economic Considerations

It is almost impossible to give a meaningful evaluation of the gain accruing to Ilada Energy Company by virtue of its noncompliance. Most of the kinds of violations noted herein stem primarily from the failure to secure necessary permits. No particular value can be ascribed to the presence or the cost of obtaining a permit. Nevertheless, some value was realized by Ilada Energy Company by virtue that it continued to operate after the expiration of its authorization. The best measure of that value may be the amount of profit realized by Ilada Energy Company in the period following the expiration of its operating authority. Formal discovery may be required to obtain this kind of financial information from Ilada itself. Bliss' economic gain is also uncertain and information on the amount and nature of wastes delivered to Ilada is lacking.

Relief Requested

The Agency requests that an order be sought from the Circuit Court ordering Ilada Energy and Bliss to cease and desist from further violations of the Act and the various violations of Chapters 3, 7 and 9 of the Board's Regulations. A substantial monetary penalty should also be requested. If, as seems possible, further investigation discovers solid evidence of criminal activities, the Agency believes that the Attorney General should consider prosecution under paragraph 44 of the Act. Because of the apparent widespread pattern of improper conduct on behalf of employees and agents of Ilada and Bliss, this case has a high Agency priority.

Recommendation for Additional Investigation

This case appears to present serious problems of proof, inasmuch as much of our information is based upon hearsay and circumstantial evidence. In addition, the evidence substantiating many of the alleged violations is not date specific but rather is very general as to specific dates and other details. Accordingly, additional information should be sought through independent investigation and, where appropriate, through formal discovery. The depositions of Mr. Nettle and Mr. Pelgus should be obtained quickly, for the reasons noted above. These depositions should be structured as evidence despositions rather than discovery depositions given the possibility that neither gentleman may survive to the date of trial. The Agency believes that further investigation, including depositions, will yield substantial results in terms of the quantity and quality of admissable evidence, as well as evidence of violations not included in this brochure and draft complaint. The Agency has had numerous contacts with Mr. Steve Buser, the Attorney for both Mr. Pelgus and Mr. Nettle, who is currently engaged in litigation against the Wilsons and Ilada on two fronts (see Attachments 37, 40 and 41); discovery and admissions against Ilada and the Wilsons have yielded addtional information which may prove very useful in this case, and Mr. Buser has offered to share this information with Agency representatives as it becomes available. This could be a gold mine of admissable evidence against Ilada.

For its part, the Agency continues its investigation of Ilada and Bliss. Additional relevant information will be provided as it becomes available.

Anticipated Defenses/Counter Arguments

It is anticipated that one defense by Ilada is that the materials removed and taken to the Ilada sites were, in fact, "product" rather than waste, requiring no IEPA permit or other authority for transportation, processing or storage at the site. This is an old argument, but one which has been used successfully in the past by others. Countering that argument is the Agency's position that the waste oil and other materials taken by Ilada were in most cases received from generators who treated and characterized these materials as wastes and not as product. This defense is viewed by the Agency, however, as a major hurdle.

Another possible defense to be raised by Ilada will be the lack of expertise on the part of many of the witnesses upon which the Agency necessarily relies; it is true that many of these witnesses are former Ilada employees and have no special training or other expertise which would entitle their observations to any particular crediblity regarding the properties of the materials transported or stored by Ilada. In addition, there is the obvious problem of potential bias of these persons, since several appear to have been disgruntled by some previous (and possibly unrelated) action of Ilada. Nevertheless, these witnesses are of great potential use and value to this case, and although they are not chemists or engineers, they can testify as to those things within the purview of virtually every person, such as physical appearance, smell, sound and other readily observed characteristics.

PVN:bls/3989C,sp

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT
NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
BUILDING 53, BOX 25227, DENVER FEDERAL CENTER
DENVER, COLORADO 80225

TO Mr. Donald C. Gipe, Chief
Technical Analysis Branch

DATE October 13, 1983

FROM Dr. Richard L. Garnas, Chief
Environmental Chemistry Branch

SUBJECT Analysis of Water, Soil and Oil Samples from Ilada Energy Incorporated, Dupo, Illinois (Project A43)

Summary

This report contains the analytical results for water, soil and oil samples collected in the vicinity of Ilada Energy Incoporated, Dupo, Illinois, (Project A43). Chemical analysis was requested for anion and elemental analysis of water, elemental analysis of oil, polychlorinated biphenyl (PCB) analysis of soil and oil, 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and chlorinated solvent analysis of oil, and TCDD analysis of soil. Most of the water samples were brine and contained high levels of salts including sodium, calcium and potassium chloride. Most of the oil samples contained high levels of elements including lead, iron, chromium, sulfur, and zinc. [redacted] Well 03 (Old Oil Well B) were much lower (Aroclor 1242 and 1260) and those from Well 02 (Old Oil Well A) were not detectable. [redacted] and some exceeded 50 ug/g. Four of the oil samples from Well 01 contained low levels of trichloroethene near our lower limit of detection. None of the oil and soil samples contained detectable levels of TCDD.

Sample Receipt, Chain-of-Custody, and Document Control

Fourteen oil/water samples and seventeen soil samples were received at the National Enforcement Investigations Center on June 28, 1983 and are identified in the attached chain-of-custody records (Attachments A through D). In addition, two blanks and a piece of cable off the sampling rig were also included. The samples were maintained in a secured area under the supervision of the Sample Custodian until assigment to the chemists. Chemists are responsible for the care and custody of the samples from the time they are received until the sample is exhausted or returned to the custodian. Due to the sensitive nature of these samples, they will be stored under lock until proper disposal is warranted. All original identifying tags, data sheets, and laboratory records will be retained at the NEIC with all other permanent case documentation. Accountable documents including logbooks, field data records, correspondence, sample tags, graphs, custody records, benchsheets, and data printouts are inventoried at the project's completion and relinguished to the Evidence Audit Unit. For information regarding access to these original documents,

contact Mr. Carroll Wills, Enforcement Specialist, at the NEIC and refer to Project Number A-43 (Ilada Energy Inc., Dupo, Illinois).

Results and Methodology

The results of general constituents analysis of the aqueous portions of the fourteen oil/water samples are in Table A (Attachments E and F). The twelve parameters measured for these samples included pH, alkalinity, total dissolved solids (TDS), water content, 7 strong acid anions, and total organic carbon (TOC). These samples contained both an oil phase and an aqueous phase, with 11 of the samples containing greater than 83% water by weight and 3 of the samples containing less than 3.6%. Eight of the 11 samples with large aqueous portions were analyzed for the majority of general constituents and represent three sample groups: 4 samples from Well 01 (Old Disposal Well), 2 samples from Well 02 (Old Oil Well A) and 2 samples from Well 03 (Old Oil Well B). From the data given in Table A, similarities and differences are apparent for the three wells. Wells 01 and 02 have similar TDS concentrations but have markedly different pH, alkalinity, and TOC values. While Well 03 has pH values like those of Well 01 and alkalinity and TOC values between those of Wells 01 and 02, the TDS values for Well 03 are the lowest of those reported. All 8 water portions contained high levels of chloride anion, with lesser amounts of bromide, nitrate and sulfate. Well 03 clearly contained the lowest levels of total anions.

The eight water portions were analyzed for 33 elemental constituents and the results are reported in Table B (Attachment G). The major cations reported for these samples are calcium, magnesium, potassium, and sodium, with the values for Well 03 consistently much lower than those for Wells 01 and 02 which were equivalent. These data, with those from Table A, indicate that the water samples were brine and contained high levels of salts. The anion to cation ratios reported in Table A for these aqeuous portions showed acceptable correlations.

The oil portions from eleven of the fourteen oil/water samples were analyzed for 19 elemental constituents and the results are reported in Table C (Attachments H and I). The oil portions from Wells 01 and 03 were remarkably similar and contained high levels of chloride, chromium, copper, iron, lead, sulfur, and zinc. The presence of these elements in this oil resembles another database that we developed for waste oils being recycled as fuel oils and could be the result of waste oil disposal down these wells. Although Well 02 contained high levels of sulfur in the oil portion, only very low or nondetectable levels of other elemental constituents were present. The oil from this well does not resemble waste oils that we have previously analyzed but does resemble virgin fuel oils in our database.

Ion selective potentiometry was utilized to determine pH. Acidity and alkalinity were determined by potentiometric titration. Total dissolved solids were calculated from conductance measurements. The water content was determined by coulometric Karl Fischer titration. Fluoride was determined by ion selective potentiometry while the other anions were

determined by ion chromatography or ion exclusion chromatography after dilution. Total organic carbon was determined by combustion and infrared detection. The general constituents precision and accuracy results are reported in Table D (Attachment J). The analysis triplicate data are a measure of precision, with the percent relative standard deviation (% RSD) ranging from 0.87% to 6.67%. Precision becomes poorer as the constituent concentrations approach the lower limit of detection. Generally, at the limit of detection precision may be 100% RSD. The spike recovery data indicate an accuracy with a range of 103% ± 5% and are acceptable. The control sample data show a range of percent deviation from true values of 0.1% to 7.0%.

Dissolved elemental constituents were determined by aqueous sample dilution and quantitative elemental analysis with plasma emission spectroscopy. The dissolved elemental constituents precision and accuracy results are reported in Table E (Attachment K). The analysis triplicate data demonstrate precision for 11 elements, with the % RSD ranging from 0.51% to 12.7%. The spike recovery data indicate an accuracy with a range of 100% ± 10% and are acceptable. The control sample data show a range of percent deviation from true values of 0.7% to 13.1%.

Elemental constituents analysis for the oil portions of samples was done by X-ray fluorescence spectroscopy. Calibration standards included Conostan oil standards containing metals as well as NBS fuel oil reference standards. Organic chlorine and bromine compounds were diluted with mineral oil to prepare standards for these elements. Matrix effects were corrected by using scattered radiation as an internal standard. All chloride concentrations were corrected for sulfur interferences. Mineral oil was used as the blank for calculating the limits of detection. Quality assurance included method of known addition as well as concurrent analysis of NBS reference standards. Precision and accuracy results are reported in Table F (Attachment L). The analysis triplicate data show precision for 19 elements with the % RSD ranging generally from 2.3% to 22%. Two elements, antimony and arsenic, were near the limits of detection and therefore had % RSD values of 41% and 76% respectively. The spike recovery data indicate an accuracy with a range of 91% ± 20% and are acceptable for this study. The control sample data show a range of percent deviation from true values of 2% to 23%.

The results of polychlorinated biphenyl (PCB) and chlorinated solvent analysis of the oil portions of 14 oil/water samples are in Table G (Attachment M). The water portions of these samples were not analyzed for these parameters because PCBs and chlorinated solvents would selectively partition into the oil phases of the samples. All of the oil samples from Well 01 contained Aroclor 1260 at concentrations ranging from 41 to 76 ug/g. Four of the 9 samples from Well 01 contained the chlorinated solvent, trichloroethene, at concentrations of 120 and 160 ug/g. These concentrations were very near our analytical limit of detection, as evidenced by the fact that two of the triplicate samples were not detectable. None of the oil samples from Well 02 contained detectable levels of PCB. Both of the oil samples from Well 03 contained measurable amounts of two PCBs, Aroclor 1242 and Aroclor 1260. The oil

samples from Well 02 and Well 03 did not contain measurable levels of chlorinated solvents. These results together with those for the elemental constituents analysis of the oils indicate that waste oils were disposed of in Well 01 and Well 03. There is no analytical evidence that Well 02 was used for disposal.

The results of PCB analysis of 17 soil samples are in Table H (Attachment N). All of the soil samples contained measurable levels of PCB. All of the soil samples contained measurable levels of Aroclor 1260, while 10 of the soil samples contained measurable levels of Aroclor 1242. Five of the samples contained total PCB concentrations in excess of 30 ug/g. The soil sample taken near Well 02 (Tag No. 7064) was relatively free of PCB while one taken near Well 03 (Tag No. 7013) contained 43 and 35 ug/g of Aroclors 1242 and 1260 respectively.

The chlorinated solvents were determined by gas chromatography with a Hall electrolytic conductivity detector and a minimum of two packed columns. The polychlorinated biphenyls were analyzed by gas chromatography with an electron capture detector and a minimum of two columns. Oil samples were extracted with methanol for chlorinated solvent analysis. Oil samples were diluted with hexane and cleaned by concentrated sulfuric acid extraction for PCB analysis. Soil samples were extracted by sonic probe with a mixture of acetone and hexane; and the solvent was partitioned with water, concentrated and cleaned by concentrated sulfuric acid extraction for PCB analysis. Precision and accuracy results are reported in Table I (Attachment O) for PCB and chlorinated solvents. The replicate analyses are a measure of precision and are generally acceptable except for trichloroethene. However, the values reported for trichloroethene are at the lower limit of detection where precision is the poorest, often approaching 100% RSD. The spike recovery data indicate an acceptable accuracy for this study for both PCB and chlorinated solvents.

The results of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) analysis for the oil portions of the 14 oil/water samples and for the 17 soil samples are in Table J (Attachment P). The water portions of the oil/water samples were not analyzed because TCDD would selectively partition into the oil phases of the samples. TCDD was not detected in any of the oil samples at detection limits that ranged from 40 to 120 ng/g. TCDD was also not detected in any of the soil samples at detection limits that ranged from 5 to 15 ng/g. All oil and soil samples were spiked with 20 ng of 13C-2,3,7,8-TCDD as an internal standard prior to sample clean-up and analysis for quality control purposes. The internal standard was only observed in 4 of 13 oil samples because in most cases the internal standard spike was below the sample detection limits. The internal standard was only observed in those instances where high levels of background hydrocarbon interferences, resulting in gradual baseline increases, were not encountered. The internal standard was observed in 13 of 16 soil samples and ranged from 82% to 170% recovery. The figures are probably artificially high due to background interferences and the fact that the spike level was approaching the lower limit of detection.

Samples were analyzed by capillary gas chromatography with a mass spectrometer detector operated in the multiple ion detection mode. Oil samples were diluted in hexane in preparation for sample cleanup. Soil samples were extracted by sonic probe with a mixture of hexane and acetone, partitioned with water and concentrated in preparation for sample cleanup. Both soil and oil extracts were then consecutively extracted with concentrated sulfuric acid, spiked with the internal standard, fractionated by alumina column chromatography, partitioned with acetonitrile, and finally polished by reverse phase column chromatography and concentrated. The % RSD of 3 standards analyzed at 200 picograms was 14%. The reagent blanks run consecutively with oil and soil samples had internal standard spike recoveries of 83% and 88% respectively.

LIST OF ATTACHMENTS

TABLE A GENERAL CONSTITUENT ANALYSIS
ILLAR. ENERGY INC., DUFO, ILLINOIS
PROJECT 443

STATION		WELL 01	WELL 01	WELL 01	WELL 01	WELL 01	WELL 01	WELL 01	WELL 01	
TAG NO.		N7072	N7045	N7038	N7039	N7040	N7025	N7125	N7128	
DATE		06/20/83	06/23/83	06/24/83	06/24/83	06/24/83	06/24/83	06/24/83	06/25/83	
TIME		1445	1200	1233	1232	1233	1650	2035	0045	
LOCATION		OLD DISPOSAL WELL 1ST	OLD DISPOSAL WELL	OLD DISPOSAL WELL TRIP.	OLD DISPOSAL WELL TRIP.	OLD DISPOSAL WELL	OLD DISPOSAL WELL	OLD DISPOSAL WELL SEQ.	OLD DISPOSAL WELL SEQ.	
PARAMETER	UNITS	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	LOD
PH	UNITS	NA	NA	7.57	NA	7.38	7.45	NA	7.79	
ALKALINITY	MG/L CaCO3	NA	NA	800.	NA	760.	744.	NA	340.	5.
TDS1	MG/L	NA	NA	11000.	NA	9850.	11400.	NA	11000.	10.
TDS2	MG/L	NA	NA	19700.	NA	17700.	20500.	NA	19700.	10.
WATER	% WT.	3.6	2.2	87.7	88.6	89.1	86.4	92.9	91.2	.5
BROMIDE	MG/L	NA	NA	47.	NA	41.	41.	NA	45.	.1
CHLORIDE	MG/L	NA	NA	9300.	NA	8700.	8700.	NA	9900.	.03
FLUORIDE	MG/L	NA	NA	1.57	NA	1.58	1.58	NA	1.62	.02
NITRATE	MG/L NO3-	NA	NA	.2	NA	56.	56.	NA	ND	.1
NITRITE	MG/L NO2-	NA	NA	ND	NA	ND	ND	NA	ND	.05
PHOSPHATE	MG/L PO4=-	NA	NA	1.3	NA	2.9	ND	NA	ND	.1
SULFATE	MG/L SO4=	NA	NA	12.	NA	1.	.8	NA	1.	.1
TOC	MG/L C	NA	NA	253.	NA	147.	115.	NA	135.	2.
CATION	MEQ/L	NA	NA	278.	NA	275.	281.	NA	273.	
ANION	MEQ/L	NA	NA	281.	NA	264.	264.	NA	261.	
C/A RATIO		NA	NA	.99	NA	1.04	1.06	NA	1.05	

1 = WATER WAS DETERMINED ON WHOLE SAMPLE. ALL OTHER PARAMETERS WERE DETERMINED ON FILTERED AQUEOUS PORTION.
LOD = LIMIT OF DETECTION
ND = LESS THAN LOD
NA = NOT ANALYZED

EPA/NEIC/DENVER

TABLE A GENERAL CONSTITUENT ANALYSIS
ILLADA ENERGY INC., DUFO, ILLINOIS
PROJECT A43

STATION		WELL 01	WELL 02	WELL 02	WELL 02	WELL 03	WELL 03			
TAG NO.		N7136	N7057	N7054	N7062	N7008	N7011			
DATE		06/25/83	06/21/83	06/21/83	06/21/83	06/23/83	06/23/83			
TIME		1200	1650	1735	1800	1450	1515			
LOCATION		OLD DISPOSAL WELL PURGE	OLD OIL WELL A SHALLOW	OLD OIL WELL A MIDDLE	OLD OIL WELL A DEEP	OLD OIL WELL B SHALLOW	OLD OIL WELL B DEEP			
PARAMETER	UNITS	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	LOD
PH	UNITS	NA	NA	6.26	6.2	7.65	7.8			
ALKALINITY	MG/L CaCO3	NA	NA	12.	12.	142.	242.			5.
TDS1	MG/L	NA	NA	11090.	9300.	1130.	1090.			10.
TDS2	MG/L	NA	NA	19800.	16700.	2025.	1950.			10.
WATER	% WT.	84.9	1.3	88.7	87.9	90.	83.			.5
BROMIDE	MG/L	NA	NA	38.	38.	3.4	ND			.1
CHLORIDE	MG/L	NA	NA	9100.	8300.	530.	550.			.03
FLUORIDE	MG/L	NA	NA	.87	.77	.19	.21			.02
NITRATE	MG/L NO3-	NA	NA	ND	ND	1.5	5.6			.1
NITRITE	MG/L NO2-	NA	NA	ND	ND	ND	ND			.05
PHOSPHATE	MG/L PO4=-	NA	NA	ND	ND	ND	ND			.1
SULFATE	MG/L SO4=	NA	NA	80.	91.	110.	76.			.1
TOC	MG/L C	NA	NA	9.	6.	28.	34.			2.
CATION	MEQ/L	NA	NA	239.	260.	21.4	21.4			
ANION	MEQ/L	NA	NA	260.	238.	20.2	22.3			
C/A RATIO		NA	NA	.92	1.07	1.06	.96			

% = WATER WAS DETERMINED ON WHOLE SAMPLE. ALL OTHER PARAMETERS WERE DETERMINED ON FILTERED AQUEOUS PORTION.
LOD = LIMIT OF DETECTION
ND = LESS THAN LOD
NA = NOT ANALYZED

EPA/NEIC/DENVER

TABLE B DISSOLVED ELEMENTAL CONSTITUENTS ANALYSIS
AQUEOUS PORTIONS OF THE SAMPLES
ILLAR. ENERGY INC., DUFO, ILLINOIS
PROJECT A43

CONCENTRATIONS IN MG/L	well 6 Shallow	well 6 Deep	Disposal well 10150	Disposal well 1233	Disposal well 1233	well A middle	well 2 Deep	Disposal well 6045	MDL ?
TAG.NO.	N7008	N7011	N7025	N7038	N7049	N7054	N7062	N7128	
ELEMENT	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	LOD
AL	ND	ND	ND	ND	ND	ND	ND	ND	.2
SB*	ND	ND	ND	ND	ND	ND	ND	ND	.01
AS*	ND	ND	ND	ND	ND	ND	ND	ND	.01
BA	.06	.08	.3	.25	.23	1.29	.99	.36	.03
BE*	ND	ND	ND	ND	ND	ND	ND	ND	.0005
B	.1	.2	3.2	3.3	3.2	2.3	2.3	3.2	.1
CD*	ND	ND	ND	ND	ND	ND	ND	ND	.003
CA	27.7	36.4	837.	862.	845.	533.	606.	782.	.01
CR*	ND	ND	.02	.02	.02	ND	ND	.02	.01
CO	ND	ND	ND	ND	ND	ND	ND	ND	.007
CU*	ND	ND	ND	ND	ND	ND	ND	ND	.02
FE	.12	2.4	.02	ND	ND	51.7	78.2	.08	.01
LA	ND	ND	ND	ND	ND	ND	ND	ND	.02
PB*	ND	ND	ND	ND	ND	ND	ND	ND	.03
MG	29.6	27.7	402.	415.	413.	333.	355.	406.	.01
MN	.346	.348	.153	.308	.242	3.35	4.07	.179	.002
HG*	ND	ND	ND	ND	ND	ND	ND	ND	.0003
MO	ND	ND	.04	.04	.04	ND	ND	.06	.04
NI*	ND	ND	ND	ND	ND	ND	ND	ND	.004
K	20.9	20.3	140.	132.	143.	114.	124.	140.	.07
SC	ND	ND	.0018	.0004	.0005	ND	ND	ND	.0003
SE*	ND	ND	ND	ND	ND	ND	ND	ND	.02
SI	ND	1.1	6.5	5.9	6.6	.7	1.	6.6	.2
AG*	ND	ND	ND	ND	ND	ND	ND	ND	.01
NA	392.	383.	4540.	4480.	4470.	4140.	4470.	4510.	1.
SR	.28	.42	30.2	31.3	30.7	22.	25.5	29.8	.04
TL*	ND	ND	ND	ND	ND	ND	ND	ND	.2
TI	ND	ND	ND	ND	ND	ND	.002	ND	.001
W	ND	ND	.2	ND	ND	.1	ND	ND	.1
V	ND	ND	ND	ND	ND	ND	ND	ND	.009
Y	ND	ND	ND	ND	ND	ND	ND	ND	.009
ZN*	ND	ND	ND	ND	ND	ND	ND	ND	.01
ZR	ND	ND	ND	ND	ND	.025	.048	ND	.007

* PRIORITY POLLUTANT
LOD = LIMIT OF DETECTION
ND = LESS THAN LOD
NA = NOT ANALYZED

EPA/NEIC/DENVER

TABLE C XRFS ELEMENTAL CONSTITUENTS ANALYSIS
OIL FORTIONS OF THE SAMPLES ONLY
ILLADA ENERGY INC., MOFO, ILLINOIS
PROJECT A43

STATION		WELL 01	WELL 01	WELL 01	WELL 01	WELL 01	WELL 01	WELL 01	WELL 01	
TAG NO.		N7072	N7045	N7038	N7039	N7040	N7025	N7125	N7128	
DATE		06/20/83	06/23/83	06/24/83	06/24/83	06/24/83	06/24/83	06/24/83	06/25/83	
TIME		1445	1200	1233	1231	1233	1650	2035	0045	
LOCATION		OLD DISPOSAL WELL 1ST.	OLD DISPOSAL WELL 2ND	OLD DISPOSAL WELL TRIP.	OLD DISPOSAL WELL TRIP.	OLD DISPOSAL WELL TRIP.	OLD DISPOSAL WELL	OLD DISPOSAL WELL SEQ.	OLD DISPOSAL WELL SEQ.	
PARAMETER	UNITS	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	LOD
SB	MG/KG	30.	10.	20.	ND	10.	ND	10.	10.	10.
AS	MG/KG	9.	8.	ND	ND	ND	ND	ND	ND	5.
BA	MG/KG	180.	170.	130.	100.	100.	80.	100.	60.	10.
BR	MG/KG	ND	ND	12.	11.	9.	19.	ND	ND	5.
CD	MG/KG	ND	ND	ND	ND	ND	ND	ND	ND	10.
CL	MG/KG	610.	782.	3120.	2440.	1830.	2230.	2190.	640.	5.
CR	MG/KG	817.	778.	253.	225.	294.	123.	335.	316.	5.
CU	MG/KG	160.	156.	113.	109.	117.	74.	93.	84.	7.
FE	MG/KG	4740.	4470.	3090.	2190.	2700.	1180.	1990.	1810.	5.
PB	MG/KG	1720.	1550.	774.	655.	788.	123.	721.	663.	5.
HG	MG/KG	ND	ND	ND	ND	ND	ND	ND	ND	5.
MO	MG/KG	21.	20.	12.	9.	11.	ND	9.	9.	5.
NI	MG/KG	13.	13.	7.	ND	ND	ND	ND	ND	5.
SE	MG/KG	ND	ND	ND	ND	ND	ND	ND	ND	5.
AG	MG/KG	ND	ND	ND	ND	ND	ND	ND	ND	6.
S	MG/KG	11000.	11300.	4903.	3300.	5700.	6500.	5200.	10500.	5.
TL	MG/KG	ND	ND	ND	ND	ND	ND	ND	ND	12.
V	MG/KG	47.	48.	50.	26.	34.	32.	19.	17.	5.
ZN	MG/KG	1880.	1730.	752.	772.	945.	217.	929.	869.	5.

LOD = LIMIT OF DETECTION
ND = LESS THAN LOD
NA = NOT ANALYZED

EPA/NEIC/DENVER

TABLE C RRFS ELEMENTAL CONSTITUENTS ANALYSIS
OIL PORTIONS OF THE SAMPLES ONLY
ILLIADA ENERGY INC., DUFO, ILLINOIS
PROJECT #43

STATION		WELL 01	WELL 02	WELL 03						
TAG NO.		N7136	N7057	N7068						
DATE		06/25/83	06/21/83	06/23/83						
TIME		1200	1650	1450						
LOCATION		OLD DISPOSAL WELL PURGE	OLD OIL WELL A SHALLOW	OLD OIL WELL B SHALLOW						
PARAMETER	UNITS	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	LOD
SB	MG/KG	20.	ND	10.						10.
AS	MG/KG	ND	ND	ND						5.
BA	MG/KG	190.	ND	100.						10.
BE	MG/KG	ND	ND	9.						5.
CD	MG/KG	ND	ND	ND						10.
CL	MG/KG	700.	26.	1830.						5.
CR	MG/KG	747.	ND	294.						5.
CU	MG/KG	179.	9.	117.						7.
FE	MG/KG	4940.	58.	2700.						5.
PB	MG/KG	1530.	ND	798.						5.
HG	MG/KG	ND	ND	ND						5.
MO	MG/KG	20.	ND	11.						5.
NI	MG/KG	11.	ND	ND						5.
SE	MG/KG	ND	ND	ND						5.
AG	MG/KG	ND	ND	ND						5.
S	MG/KG	10000.	11000.	5700.						12.
TL	MG/KG	ND	ND	ND						5.
V	MG/KG	61.	ND	34.						5.
ZN	MG/KG	1700.	ND	945.						5.

LOD = LIMIT OF DETECTION
ND = LESS THAN LOD
NA = NOT ANALYZED

EPA/NEIE/DENVER

TABLE D GENERAL CONSTITUENTS ANALYSIS PRECISION AND ACCURACY REPORT
ILLAWA ENERGY INC., DUPO ILLINOIS
PROJECT 442

CONCENTRATIONS IN MG/KG WET WEIGHT

	ANALYSIS TRIPLICATE DATA			ANALYSIS SPIKE RECOVERY DATA				ANALYSIS CONTROL SAMPLE DATA		
PARAMETER	SAMP. NO.	AVERAGE	ZRSD	SAMP. NO.	SAMPLE LEVEL	SPIKE LEVEL	ZREC.	CONTROL SAMPLE ID	ACTUAL VALUE	FOUND ZDEV
BROMIDE	N7128	45.5	2.47	N7128	45.5	50.	94.7			
CHLORIDE	N7128	8920.	0.87	N7128	8900.	2500.	107.5	EPA 882 - 1	65.3	2.0
FLUORIDE	N7128	1.62	2.56	N7128	1.62	10.	101.6	EPA 882 - 1	1.30	2.0
NITRATE	N7128	ND		N7128	ND	10.	98.1	EPA 481 - 2	1.60	-5.0
NITRITE	N7128	ND		N7128	ND	10.	109.7			
PHOSPHATE	N7128	ND		N7128	ND	10.	107.9	EPA 481 - 2	0.27	7.3
SULFATE	N7128	0.92	6.67	N7128	0.92	10.	103.2	EPA 882 - 1	93.8	0.1
TOC	N7008	28.2	3.06	N7008	28.2	20.0	100.5	EPA 276	90.0	-7.0

ND = LESS THAN LOD
ZRSD = PERCENT RELATIVE STANDARD DEVIATION
ZREC = PERCENT RECOVERY OF SPIKE
ZDEV = PERCENT DEVIATION OF FOUND VALUE FROM ACTUAL VALUE

EPA/NEIC/DENVER

TABLE E DISSOLVED ELEMENTAL CONSTITUENTS ANALYSIS PRECISION AND ACCURACY REPORT
ILLIANA ENERGY INC., DUPO ILLINOIS
PROJECT A43

CONCENTRATIONS IN MG/KG WET WEIGHT

	ANALYSIS TRIPLICATE DATA			ANALYSIS SPIKE RECOVERY DATA				ANALYSIS CONTROL SAMPLE DATA		
ELEMENT	SAMP. NO.	AVERAGE	%RSD	SAMP. NO.	SAMPLE LEVEL	SPIKE LEVEL	%REC.	CONTROL SAMPLE ID	ACTUAL VALUE	FOUND %DEV
AL	N7040	ND		N7025	ND	5.	100.3	EPA 475 - 3	0.712	3.1
SB	N7040	ND		N7054	ND	0.2	104.0	EPA ICP -23	1.0	7.8
AS	N7040	ND		N7054	ND	0.2	108.0	EPA 475 - 3	0.198	-2.3
BA	N7040	0.355	5.09	N7054	1.29	0.5	100.5	EPA ICP -23	1.2	2.0
BE	N7040	ND		N7054	ND	0.5	91.5	EPA 475 - 3	0.750	-9.5
B	N7040	3.38	1.98	N7054	2.3	5.0	98.1			
CD	N7040	ND		N7054	ND	0.5	97.4	EPA 475 - 3	0.050	-13.1
CA	N7040	854.	1.43	N7025	856.	1000.	98.8	EPA 882 - 1	40.6	2.6
CR	N7040	0.0162	12.7	N7054	ND	0.5	101.2	EPA 475 - 3	0.150	-1.5
CO	N7040	ND		N7054	ND	0.5	95.5	EPA 475 - 3	0.500	2.6
CU	N7040	ND		N7054	ND	0.5	103.3	EPA 475 - 3	0.250	7.4
FE	N7040	0.0841	12.7	N7054	51.7	25.	96.1	EPA 475 - 3	0.600	9.4
LA	N7040	ND		N7025	ND	0.5	93.3			
PB	N7040	ND		N7054	ND	0.5	96.5	EPA 475 - 3	0.250	-0.7
MG	N7040	421.	1.80	N7025	422.	1000.	99.6	EPA 882 - 1	8.4	3.6
MN	N7040	0.234	3.09	N7038	0.308	1.0	97.7	EPA 475 - 3	0.350	-0.6
HG	N7008	ND		N7008	ND	25.	91.6	EPA 475 - 3	0.075	7.9
MO	N7040	ND		N7054	ND	0.5	91.8	EPA ICP -23	1.2	-1.3
NI	N7040	ND		N7054	ND	0.5	98.5	EPA 475 - 3	0.250	-6.2
K	N7040	125.	12.6	N7038	132.	100.	106.0	EPA 882 - 1	9.8	1.7
SC	N7040	ND		N7054	ND	1.0	91.9			
SE	N7040	ND		N7054	ND	0.2	101.0	EPA 475 - 3	0.0369	-8.7
SI	N7040	6.71	0.83	N7025	6.5	5.0	96.8			
AG	N7040	ND		N7054	ND	0.5	110.5			
NA	N7040	4440.	0.66	N7025	4640.	5000.	99.3	EPA 882 - 1	46.5	5.9
SR	N7040	30.7	0.51	N7025	30.2	50.	95.6			
TL	N7040	ND		N7054	ND	5.	97.9	EPA ICP -23	1.2	-2.5
TI	N7040	ND		N7054	ND	0.5	94.4	EPA ICP -23	1.0	1.8
W	N7040	ND		N7054	0.1	5.	92.3			
V	N7040	ND		N7054	ND	1.0	91.2	EPA 475 - 3	0.750	-2.8
Y	N7040	ND		N7054	ND	1.0	91.1			
ZN	N7040	ND		N7054	ND	0.5	94.0	EPA 475 - 3	0.200	-1.2
ZR	N7040	ND		N7054	0.025	0.5	105.9			

ND = LESS THAN LOD
%RSD = PERCENT RELATIVE STANDARD DEVIATION
%REC = PERCENT RECOVERY OF SPIKE
%DEV = PERCENT DEVIATION OF FOUND VALUE FROM ACTUAL VALUE

EPA/NEIC/DENVER

TABLE F XRFS ELEMENTAL CONSTITUENTS ANALYSIS PRECISION AND ACCURACY REPORT
ILLAWA ENERGY INC., RUPO ILLINOIS
PROJECT A43

CONCENTRATIONS IN MG/KG WET WEIGHT

	ANALYSIS TRIPLICATE DATA			ANALYSIS SPIKE RECOVERY DATA				ANALYSIS CONTROL SAMPLE DATA		
ELEMENT	SAMP. NO.	AVERAGE	%RSD	SAMP. NO.	SAMPLE LEVEL	SPIKE LEVEL	%REC.	CONTROL SAMPLE ID	ACTUAL VALUE	FOUND %DEV
SB	N7136	20.	41.	N7125	8.	50.	111.			
AS	N7136	4.1	76.	N7045	8.	48.	91.			
BA	N7136	190.	13.	N7125	100.	900.	95.			
BR	N7136	ND		N7125	2.	39.	101.			
CD	N7136	ND		N7125	ND	900.	103.			
CL	N7045	782.	3.1	N7045	782.	10800.	93.	NBS 1634A	38.	-23.
CR	N7136	747.	8.	N7125	335.	900.	98.			
CU	N7136	179.	9.	N7125	93.	900.	89.			
FE	N7136	4940.	13.	N7125	1990.	900.	93.	NBS 1634A	29.	-6.
PB	N7136	1530.	10.	N7125	721.	900.	103.			
HG	N7136	ND		N7125	ND	50.	72.			
MO	N7136	19.6	7.	N7125	9.	900.	79.			
NI	N7136	10.8	11.	N7125	ND	900.	90.	NBS 1634A	24.	-17.
SE	N7136	ND		N7125	ND	50.	98.			
AG	N7136	ND		N7125	ND	900.	96.			
S	N7045	11300.	2.3	N7045	11300.	27200.	103.	NBS 1634A	28000.	2.
TL	N7136	ND		N7125	ND	NS				
V	N7136	60.6	22.	N7125	19.	900.	105.	NBS 1634A	54.3	-3.
ZN	N7136	1700.	6.	N7125	929.	900.	87.			

ND = LESS THAN LOD
NS = NOT SPIKED
%RSD = PERCENT RELATIVE STANDARD DEVIATION
%REC = PERCENT RECOVERY OF SPIKE
%DEV = PERCENT DEVIATION OF FOUND VALUE FROM ACTUAL VALUE

EPA/NEIC/DENVER

TABLE G. ANALYTICAL RESULTS: PROJECT A43
PCB AND CHLORINATED SOLVENT ANALYSIS OF OILS

STATION NUMBER	TAG NUMBER	CONCENTRATION ug/g AROCLOR 1242	AROCLOR 1260	TOTAL PCB	TRICHLOROETHENE
01	7025 Disposal well 1255	ND[a]	51	51	~~120~~
01-TRIP	7038 Disposal well	ND	59	59	~~120~~
01-TRIP	7039 1233	ND	56	56	NDD[d]
01-TRIP	7040 —	ND	59	59	NDD
01	7045 Disposal Rec well	ND	76	76	NDD
01	7125 Disposal well? 2635	ND	41	41	~~160~~
01	7128 Disposal well? 2043	ND	51	51	~~160~~
01	7136 Disposal well 2372	ND	57	57	NDD
01	7072 Disposal well 1st 1005	ND	74	74	NDD
02	7054 well A/mid.	ND	ND	ND[b]	NDD
02	7057 well A/shallow	ND	ND	ND[c]	NDD
02	7062 well A/Deep	ND	ND	ND[c]	NDD
03	7008 well B/shallow	3.6	1.7	5.3	NDD
03	7011 well B/DEEP	0.8	0.2	1.0	NDD

[a] None detected. In the presence of more than 40 ug/g Aroclor 1260, the detection limit for Aroclor 1242 is 5 ug/g.

[b] Total PCB detection limit is 0.2 ug/g.

[c] Total PCB detection limit is 2 ug/g.

[d] ~~None detected. Detection limit of 100~~ ug/g.

TABLE H. ANALYTICAL RESULTS: PROJECT A43
PCB ANALYSIS OF SOILS

STATION NUMBER	TAG NUMBER	CONCENTRATION ug/g AROCLOR 1242	AROCLOR 1260	TOTAL PCB
01-TRIP	7067	ND[a]	5.7	5.7
01-TRIP	7068	0.1	4.8	4.9
01-TRIP	7069	ND[a]	4.2	4.2
02 - old tank area on west side of road.	7055	1.0	3.7	4.7
03	7051	ND[b]	6.6	6.6
04	7001	17	51	68
05 - Near oil well A	7064	ND[a]	0.2	0.2
06	7004	0.3	1.0	1.3
07 - East of old lagoon Near the building	7005	1.4	12	13
08	7049	3.5	33	36
09	7048	ND[b]	9.7	9.7
10 - Near oil well B	7013	43	35	78
11 Still Area	7017	0.7	30	31
12 - Near intersection of site road and surface runoff	7019	ND[a]	0.5	0.5
13 North side of open pit.	7033	0.4	1.2	1.6
14 South side of open pit	7021	ND[a]	0.6	0.6
15 Filled in pond on South side of open pond	7023	7.1	36	43

a None detected. Detection limit of 0.1 ug/g.

b None detected. Detection limit of 0.5 ug/g.

TABLE I. ANALYTICAL RESULTS: PROJECT A43
PCB AND CHLORINATED SOLVENT ANALYSIS:
PRECISION AND ACCURACY RESULTS

PRECISION	TAG NUMBER	CONCENTRATION ug/g	a
Aroclor 1260	7025	51	51
	7045	76	76
	7072	77	70
	7125	42	41
	7128	56	46
	7136	56	58
	7004	1.0	1.1
Aroclor 1242	7004	0.2	0.4
Trichloroethene	7128	160	100

ACCURACY	TAG NUMBER	ug ADDED	% RECOVERY
Aroclor 1260	7057	100	97
	7064	50	105
Aroclor 1242	7064	50	90
Trichloroethene	7057	500	76
Tetrachloroethene	7057	500	70

a Duplicate results.

TABLE J. ANALYTICAL RESULTS: PROJECT A43
TCDD ANALYSIS FOR SOILS AND OILS:
INTERNAL STANDARD RECOVERY
AND DETECTION LIMIT

OIL			SOIL		
TAG NUMBER	INT. STD.[a] % RECOVERY	TCDD[b] LLD ng/g	TAG NUMBER	INT. STD. % RECOVERY	TCDD LLD ng/
7025	ND[c]	120	7067	110	5
7038	ND	120	7068	ND	10
7039	ND	120	7069	120	5
7040	ND	120	7055	95	5
7045	ND	120	7051	150	5
7125	ND	120	7001	100	5
7128	ND	80	7064	ND	10
7136	130	80	7004	110	5
7072	ND	80	7005	110	5
7054	ND	80	7049	ND	15
7057	140	40	7048	100	5
7062	120	40	7013	82	5
7008	PBL[d]	40	7017	160	5
7011	ND	80	7019	130	5
			7033	170	5
			7021	ND	10
			7023	160	5

a Internal standard was 20 ng of 13C-2,3,7,8-TCDD per sample aliquot.

b Lower limit of detection for 2,3,7,8-TCDD.

c None Detected.

d Present but less than detection limit.